

Claims

What is claimed is:

- Sub A1
- A system for bridging disparate object systems, comprising:
- a first wrapper to bridge communications between a first object system and a second object system; and
 - a second wrapper to bridge communications between the second object system and the first object system, wherein the first wrapper insulates the first object system from interface implementations in the second object system and the second wrapper insulates the second object system from interface implementations in the first object system to facilitate transparent communications between the first and second object systems.
- 2) The system of claim 1, wherein the first object system is at least one of a managed object system and an unmanaged object system, and the second object system is at least one of a managed object system and an unmanaged object system.
- 3) The system of claim 1, wherein the first wrapper and second wrapper serve as a proxy to the respective object systems that point to a stub within the wrappers in order to marshal data between the object systems.
- 4) The system of claim 1, wherein the first wrapper queries for type information from the second object system and forms interfaces from methods exposed from the type information.
- 5) The system of claim 1, wherein the second wrapper calls the first object system and determines an interface by casting to a type and examining an exception.

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- 6) The system of claim 5, wherein an adapter object is provided to map interfaces of an unknown type in the first object system to a known type in the second object system.
 - 7) The system of claim 1, wherein the first object system is reference counted and the second object system is traced.
 - 8) The system of claim 7, wherein the first wrapper maintains a traced reference for the second object system and reference counts interfaces utilized by the first object system.
 - 9) The system of claim 7, wherein the second wrapper holds a traced reference for the second object system and releases interfaces utilized by the first object system.
 - 10) The system of claim 7, further comprising a garbage collector to reclaim objects within the second object system, wherein unmanaged objects are reclaimed based upon the reference count in the first object system.
 - 11) The system of claim 1, wherein object identities are maintained by utilizing a single managed wrapper per each object.
 - 12) The system of claim 11, wherein a specialized wrapper is defined that subtypes off of a generic wrapper to simulate a class.
 - 13) The system of claim 1, further comprising a bridging services component to detect an unmanaged interface call and direct a managed client to an unmanaged object.
 - 14) The system of claim 13, wherein the unmanaged interface call is detected through a vtable reference from the second object system.

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- 15) The system of claim 1, wherein one or more objects belonging to the first and second object systems are activated *via* at least one of an early bound and late bound manner.
- 16) The system of claim 15, wherein a late bound interface is employed to provide late bound activation.
- 17) The system of claim 15, wherein early binding is provided at compile time *via* type information derived from a foreign object system.
- 18) The system of claim 17, wherein type information is provided from at least one of a type library export and type library import tool.
- 19) The system of claim 1, wherein the first object system utilizes results returned on a method call and the second object system utilizes exceptions.
- 20) The system of claim 19, wherein results are mapped to exceptions and exceptions are mapped to results.
- 21) The system of claim 1, wherein object reusability is provided *via* an inner object and outer object relationship.
- 22) The system of claim 1, wherein intra object communications is provided *via* wrappers.
- 23) The system of claim 22, wherein inter object communications is provided *via* proxies within the wrappers.
- 24) The system of claim 1, wherein calls are routed to a foreign object system according to environment partitioning rules of the foreign object system.

- 25) A computer-readable medium having computer-executable components for executing the system of claim 1.
- 26) A method for bridging objects, comprising:
activating a wrapper from a first object system according to interface implementations of a second object system; and
utilizing the wrapper to facilitate transparent communications between the object systems.
- 27) The method of claim 26, further comprising,
providing bridging services to direct the communications between the object systems.
- 28) The method of claim 26, further comprising,
proxying the respective object systems from a stub within the wrappers in order to marshal data between the object systems.
- 29) The method of claim 26, further comprising,
querying type information from the second object system; and
forming interfaces from methods exposed from the type information.
- 30) The method of claim 26, further comprising,
determining an interface by casting to a type; and
examining an exception resulting from the caste.
- 31) The method of claim 26, further comprising,
maintaining object identities by utilizing a single managed wrapper per each object.

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- 32) The method of claim 31, further comprising, creating a specialized wrapper that subtypes off of a generic wrapper to simulate a class.
- 33) The method of claim 26, further comprising, activating objects *via* at least one of an early binding and a late binding.
- 34) The method of claim 26, further comprising, providing type information from at least one of a type library export and type library import tool.
- 35) The method of claim 26, further comprising, mapping results to exceptions; and mapping exceptions to results.
- 36) The method of claim 26, further comprising, routing calls to a foreign object system according to environment partitioning rules of the foreign object system.
- 37) A system for bridging objects, comprising:
 - means for activating a wrapper from a first object system according to interface implementations of a second object system; and
 - means for utilizing the wrapper to facilitate transparent communications between the object systems.
- 38) The system of claim 37, further comprising, means for directing communications between the object systems.

39) The system of claim 37, further comprising,
means for proxying the respective object systems in order to marshal data between the
object systems.

40) A signal facilitating object communications, comprising:
a signal for communicating between one or more object systems;
a wrapper activated *via* the signal from a first object system according to interface
implementations of a second object system, wherein the wrapper facilitates transparent
communications between the one or more object systems.

41) The signal of claim 40, wherein the signal is communicated over at least one of a
network system and a wireless system.

42) An object system bridge, comprising:
at least one wrapper; and
a bridge service to enable the wrapper and facilitate transparent communications
between at least one of a managed object system and an unmanaged object system;
wherein the wrapper insulates the at least one of the managed object system and the
unmanaged object system from interface implementations in at least one other managed
object system and unmanaged object system.